

Claims

1. A metallic aircraft wing skin comprising a first surface for forming at least a part of the external surface of an aircraft wing and a second surface opposite the first surface, wherein the second surface comprises a multiplicity of strips extending in substantially the same direction.
2. A wing skin according to claim 1, wherein the wing skin is a monolithic metal structure.
3. A wing skin according to claim 1 or claim 2, wherein the thickness of the wing skin is substantially constant across at least 90% of the width of a strip.
4. A wing skin according to any preceding claim, wherein the wing skin has a plurality of strip junctions, the strip junctions each joining two strips in the direction in which the strips extend, having an interface surface arranged to be able to receive a respective rib foot of a single rib extending along the wing skin, and being so arranged that the respective interface surfaces are substantially parallel to the first surface and substantially parallel to the surfaces of the rib feet that interface with the respective interface surfaces.
5. A wing skin according to any preceding claim, wherein the multiplicity of strips are adjacent to one another.
6. An aircraft wing-box including ribs, stringers extending transversely to the ribs, and a wing skin according to any preceding claim, wherein the strips are so arranged that each strip is associated with a single stringer.
7. A method of manufacturing an aircraft wing structure including providing a block of metal material for machining

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to form a wing skin, the block having two opposing surfaces, the method including machining one of the surfaces to form the surface of the wing skin that is to be in the interior of a wing box, the machining of the surface including the steps of machining a multiplicity of strips extending in substantially the same direction.

8. A method according to claim 7, wherein the machining of each strip includes milling in one direction along the length of the strip to be formed.

9. A method according to claim 7 or claim 8, wherein the opposite surface of the block is substantially planar, and the machining of the surface includes machining a plurality of plateaus parallel to the opposite surface of the block, the wing skin being suitable for forming the wing skin of a wing box including a plurality of ribs, each rib having a plurality of rib feet for connecting to the wing skin, the plateaus being so arranged and configured that the rib feet of the ribs are able to be mounted on the plateaus.

10. A method of manufacturing an aircraft wing skin including the steps of designing a wing skin by means of performing the steps of mathematically modelling at least a part of a wing box structure including a wing skin and at least those parts of a plurality of ribs and stringers that interface with the wing skin, the modelled wing skin having an interior surface inside the wing box, the interior surface comprising a multiplicity of planar strips, the multiplicity of strips extending in substantially the same direction, at least two of the strips having, at points on a notional line that is perpendicular to the direction in which the strips extend, different gradients in the direction in which the strips extend, modelling the loads that such a wing skin must be able to sustain in reality for safe operation, the shape of the wing skin being determined having regard to reducing the mass of the wing

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skin and having regard to the need for the wing skin to be able to sustain the modelled loads, and then manufacturing a metallic wing skin substantially in accordance with the design.

5 11. A metallic aircraft wing skin comprising a first surface for forming at least a part of the external surface of an aircraft wing and a second surface opposite the first surface, wherein the second surface comprises a multiplicity of strips extending in substantially the same
10 direction, the second surface being so shaped that if the wing skin were globally deformed so that the first surface were mapped onto a flat surface, there would be at least two strips that, at respective points on a notional line that is perpendicular to the direction in which the strips
15 extend, have different gradients in the direction in which the strips extend.

12. A metallic aircraft wing skin comprising a first surface for forming at least a part of the external surface of an aircraft wing and a second surface opposite the first
20 surface, wherein the second surface comprises a multiplicity of strips extending in substantially the same direction, the strips having a thickness that varies both along a notional line along the length of each strip and from one strip to the next along a notional line transverse
25 to the length of the strips.

13. A method of manufacturing an aircraft wing structure including providing a block of metal material for machining to form a wing skin according to either claim 11 or claim 12, the block having two opposing surfaces, the method
30 including machining one of the surfaces to form the second surface of the wing skin, the machining of the surface including the steps of machining a multiplicity of strips extending in substantially the same direction.